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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,067	07/31/2003	Gerard Chauvel	TI-35423 (1962-05402)	2049
23494	7590	10/20/2005	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED			GU, SHAWN X	
P O BOX 655474, M/S 3999			ART UNIT	
DALLAS, TX 75265			PAPER NUMBER	

2189

DATE MAILED: 10/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/632,067	<b>Applicant(s)</b> CHAUVEL ET AL.	
	<b>Examiner</b> Shawn Gu	<b>Art Unit</b> 2189	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 6, 7, 9, 11, 14-20 and 22 is/are rejected.
- 7) ☐ Claim(s) 2, 4, 5, 8, 10, 12, 13, 21, 23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/31/05, 7/8/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Priority***

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d) and domestic priority under 35 U.S.C. 119(e).

Claims 1-23 are pending.

### ***Information Disclosure Statement***

The information disclosure statements (IDS) submitted on 31 July 2003 and 8 July 2004 were filed after the mailing date of the application on 31 July 2003. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6, 7, 14 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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As for claims 6 and 14, it is unclear to the examiner whether "all other ways" refers to multi-way set association, other determination steps, or some other methods.

As for claims 7 and 15, the claims recite the limitations "said way storing" and "the 2-way set associative cache". There is insufficient antecedent basis for these limitations in the claims.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 7, 9, 11, 15-20 and 22 are rejected under U.S.C. 102(b) as being anticipated by Tremblay et al. [6,125,439].

As for claims 1, 9, 17 and 20, Tremblay et al. discloses a processor (Fig 1, 100), comprising:

a processing core that generates memory addresses to access a main memory (Fig 1, "To External Memory"; Fig 2; Col 7, Lines 30-31; Col 7, Lines 47-48) and on which a plurality of methods operate (Col 7, Lines 5-10), each method using its own set of local variables (Fig 4A; Fig 4B; Fig 4D); and

a cache subsystem comprising a multi-way set associative cache (Fig 1, 165; Col 20, Lines 54-59) and a data memory that holds a contiguous block of memory (Col 17, Lines 11-13; Fig 4A, Stack 400) defined by an address stored in a register (Col 8, Lines 10-20), wherein local variables are stored in said data memory (Col 8, Lines 50-60; Col 9, Lines 55-60).

The method of claim 20 is clearly performed by Tremblay et al.'s processor.

As for claims 3, 11 and 22, Tremblay et al. discloses that when a new method is called, the local variables associated with the called method use data memory space previously used by local variables associated with completed methods without generating a miss (Col 21, Lines 8-20).

As for claims 7 and 15, Tremblay et al. further discloses the processor of claim 1 wherein, if said way storing local variables does not have sufficient capacity to store the local variables, then at least some local variables are stored in the 2-way set associative cache (Col 17, Lines 1-17; Col 19, Lines 61-65).

The cache subsystem of claim 15 is clearly comprised by Tremblay et al.'s processor.

As for claim 16, Tremblay et al. further discloses the cache subsystem of claim 15, wherein said local variables comprise local variables used in a stack-based instruction set (Col 7, Lines 16-20; Col 9, Lines 20-32).

As for claim 18, Tremblay et al. further discloses the cache subsystem of claim 17 includes a means for locking said local variables in said cache system (Col 20, Lines 54-62; Valid Bit is a means for locking).

As for claim 19, Tremblay et al. further discloses the cache subsystem of claim 17 includes a means for preventing said local variables from being written to external memory upon completion of a method that uses said local variables (Col 20, Line 54-62; Valid Bit).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tremblay et al.

As for claims 6 and 14, Tremblay et al. discloses that request from data cache to external memory always has a higher priority than instruction cache request to external memory as a result of arbitration logic between internal and external components (Col 11, Lines 48-58). Although Tremblay et al. does not disclose granting higher priority to data memory containing the local variables during hit/miss determinations, it is obvious to one ordinarily skilled in the art at the time of the applicant's invention that since hit/miss determination might result in access to external memory, higher priority should be given to such data memory during that process, in order to allow the external memory access arbitration logic of Tremblay et al. to grant a higher priority to data cache requests to external memory.

***Allowable Subject Matter***

Claims 2, 4, 5, 8, 10, 12, 13, 21 and 23 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shawn Gu whose telephone number is (571) 272-0703. The examiner can normally be reached on 9am-5pm, Monday through Friday.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (571)272-4210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Shawn X Gu  
Assistant Examiner  
Art Unit 2189

13 October 2005



KEVIN VERBRUGGE  
PRIMARY EXAMINER